

Figure S1. Characterization of serum-isolated particles. (a) Representative transmission electron microscopy (TEM) image of the tested samples with a 100 nm scale bar. (b) Figure shows Alix, CD5L markers, and Calnexin examined by Western blot (WB) analyses. (c) The diagrams display the concentration and size distributions of the serum-derived particles of the four main groups measured by nanoparticle tracking analysis (NTA). (Abbreviations: CTRL, control; GBM, glioblastoma multiforme; BM, brain metastasis; M, meningioma; lys, cell lysate; pm, protein marker; C, particle concentration; Me, mean diameter size; Mo, mode diameter size.)

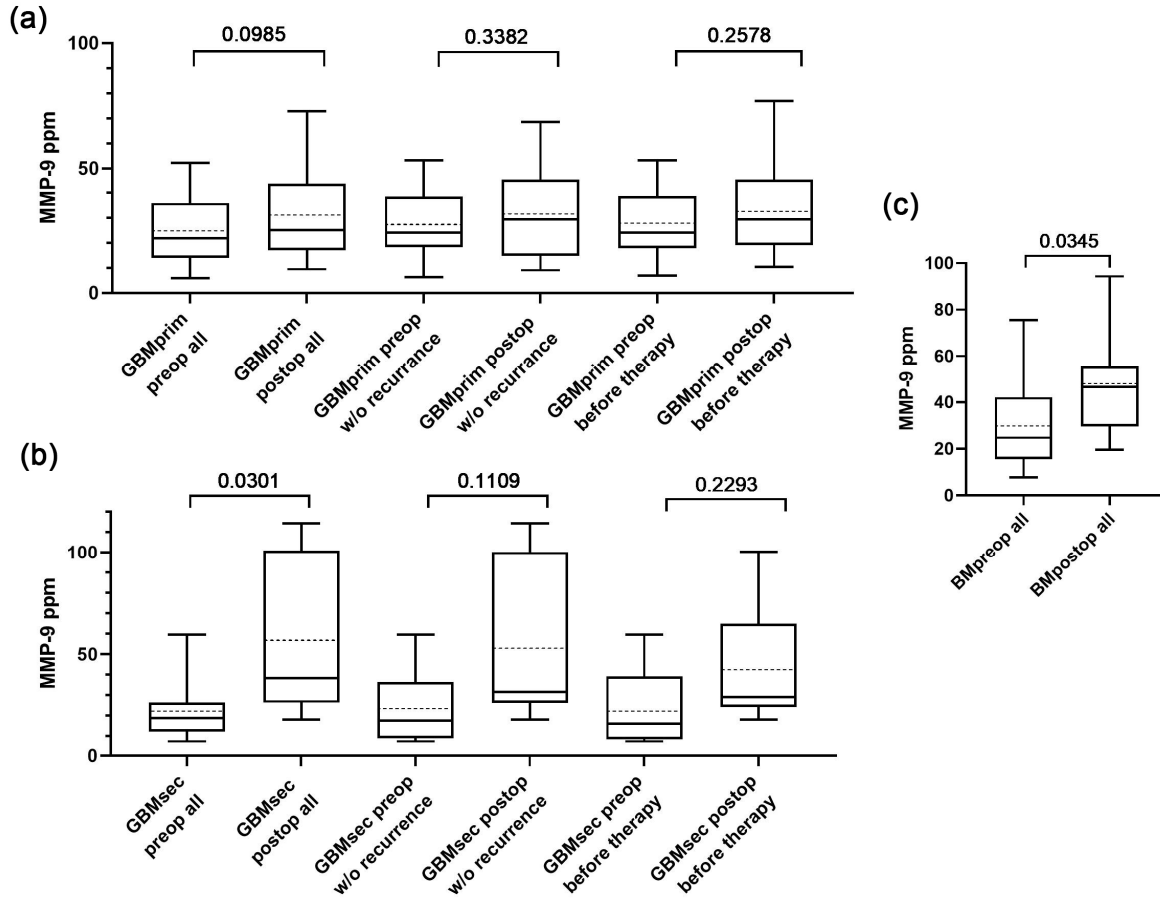
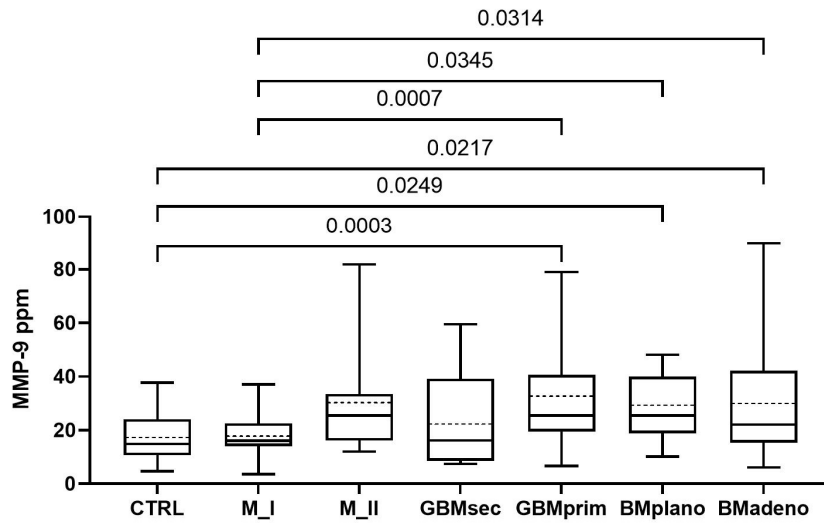
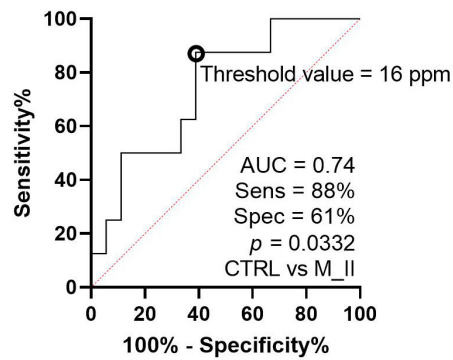


Figure S2. Comparison of all the preoperative and the postoperative GBM and BM samples in terms of MMP-9 level. (a) MMP-9 levels of serum derived sEVs in primary GBM group before and after surgical resection (boxplots show median with interquartile range, error bars range from the 5-95 percentiles); nGBMprim preop all = 67 nGBMprim postop all = 32) with the exception of recurrent tumors (nGBMprim preop w/o recurrence = 52, nGBMprim postop w/o recurrence = 23) and those who received therapy (nGBMprim preop before therapy = 52, nGBMprim postop before therapy = 23). (b) MMP-9 levels of serum derived sEVs in secondary GBM group before and after surgical resection (nGBMsec preop all = 9 nGBMsec postop all = 9) with the exception of recurrent tumours (nGBMsec preop w/o recurrence = 7, nGBMsec postop w/o recurrence = 8) and those who received therapy (nGBMsec preop before therapy = 6, nGBMsec postop before therapy = 7). (c) MMP-9 levels in BM group considering that sampling was made before or after surgical resection (nBMpreop all = 27, nBMpostop all = 10).

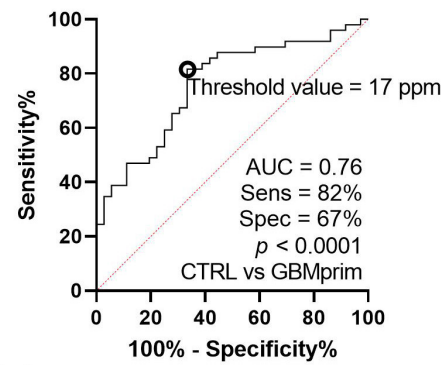
(a)



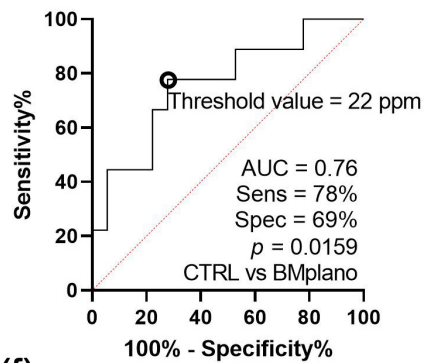
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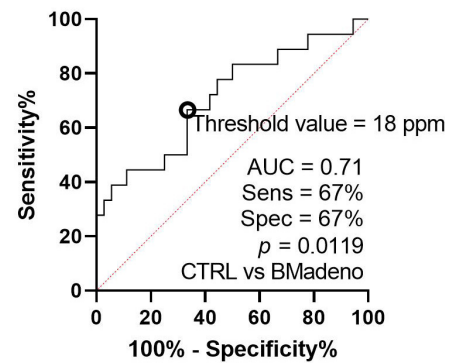
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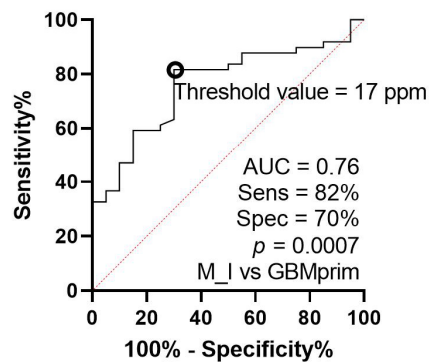
(d)



(e)



(f)



(g)

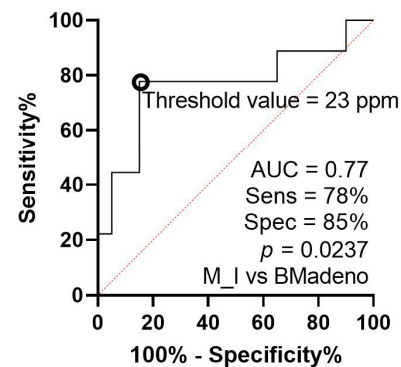


Figure S3. Differences among controls and various CNS tumour patients based on MMP-9 level of sEVs originated from preoperative serum samples. (a) Diagram shows the MMP-9 level of serum sEVs among the seven patient groups (boxplots show median with interquartile range, error bars range from the 5-95 percentiles); nCTRL = 36, nM_I = 20, nM_II = 8, nGBMsec = 5, nGBMprim = 49, nBMplano = 9, nBMadeno = 18) (b) ROC curves for comparing the patient groups having significant differences in MMP-9 levels (nCTRL = 36, nM_I = 20, nM_II = 8, nGBMsec = 5, nGBMprim = 49, nBMplano = 9, nBMadeno = 18; threshold values of the group-membership score are marked with black circles).